Betis Baheri

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Education

Kent State University — Kent, OH
Ph.D. Candidate in Computer Science, Advisor: Qiang Guan, GPA: 4.00 — 2019–Current
- Dissertation: "Quantum Time Oscillation: Advanced Scheduling Across the Temporal Spectrum"

Kent State University — Kent, OH
M.S. in Computer Science, GPA: 4.00 — 2018–2020
- Thesis: "MARS: Multi-Scalable Actor-Critic Reinforcement Learning Scheduler"

Kent State University — Kent, OH
B.S. in Computer Science, GPA: 3.652 — 2015–2018

Research Interests

- Research on Quantum Computing with Dr. Qiang Guan (PhD.), Kent State University 2019 - Current
- Research on HPC Cloud Systems with Dr. Qiang Guan (Master), Kent State University 2019 - 2020
- Research on Security and Privacy with Dr. Kambiz Ghazinour (Master), Kent State University 2016 - 2019

Experience

Kent State University — Kent, OH
Computer Communication Networks — Fall 2022
- Instructor
- Teaching Network Concepts

Kent State University — Kent, OH
Research and Deployment Machine Learning Applications at Guans Lab — 2019 - Current
- Quantum Computing
- My research domain encompasses several key areas within the quantum computing field, including quantum machine learning, error correction methodologies, analysis of quantum systems, and the injection of errors in quantum environments for study and improvement purposes.
- Machine Learning Development on HPC Systems
- Developing and deploying CPU/GPU-based Machine Learning applications on various systems, including HPC and cloud systems. Technology involved in projects are Python, C/C++, Tensorflow, Pytorch, CUDA, MPI, Slurm, and recent ML libraries.
- System Administration for GUANS Lab at Kent State University
- Managing and maintaining Linux, VM, and Windows-based servers. Providing services, connectivity, and troubleshooting various applications on back-end servers.

Texas Advanced Computing Center (TACC) — Austin, TX
Internship - Research Engineering/Scientist Professional — May 2021 - August 2021
- Machine Learning Development on HPC Systems

- The development and deployment of FanStore, a sophisticated application, was executed on the Total Machine at the Texas Advanced Computing Center. This process involved the utilization of Pytorch, Pytorch profiler, CUDA, and MPI. The project also encompassed the preparation and development of machine learning (ML) applications tailored for multi-architecture high-performance computing (HPC) systems, encompassing diverse CPU architectures. My responsibilities included managing and profiling these ML applications, monitoring their performance, and facilitating their build and deployment across multiple HPC systems.

Kent Display Inc. Kent, OH
Internship - Software development and Database management Summer 2018

- Automated product fault detection
- The project entailed the application of machine learning (ML) techniques to identify and forecast defects in raw materials. Additionally, a website was developed to enhance the efficiency and accessibility of inventory management.

Kent State University Kent, OH
Teaching Assistance and Grader 2016 - 2018

- Teaching Assistance and Grader
- Data Mining, Drone Programming, Computer Architecture, Structural Programming Languages, Discrete Math

Freelancer
Software development and IT Support 2005- 2015

- IT and software development
- Over the course of a decade, my professional responsibilities encompassed the oversight and management of software and network infrastructure for a multitude of corporations. My role primarily involved the development, endpoint support, and establishment of security and privacy protocols. Operating as an independent contractor, I specialized in configuring services across various operating systems, including Windows, Linux, and Mac OS.

FHBE Web Designing TH
Web Developer 2011 - 2013

- Website design
- Developed and design website in PHP, ASP .NET, and Java

Barin Elha Company TH
Network and IT consultant 2011 - 2014

- Network and IT consultant
- Managed the hardware and maintained the network for Barin Elha Company

Publications

[1] **B. Baheri**, V. Chaudhary, A. Li, S. Xu, B. Fang, and Q. Guan, "Quantum noise mitigation: Introducing the robust quantum circuit scheduler for enhanced fidelity and throughput", in *Proceedings of the 2023 International Workshop on Quantum Classical Cooperative*, ser. QCCC '23, Orlando, FL, USA: Association for Computing Machinery, 2023, pp. 21–24, ISBN: 9798400701627.

[2] N. Dilillo, E. Giusto, E. Dri, **B. Baheri**, Q. Guan, B. Montrucchio, and P. Rech, *Understanding the Effect of Transpilation in the Reliability of Quantum Circuits*. IEEE, 2023.

[3] E. Giusto, E. Dri, B. Montrucchio, **B. Baheri**, Q. Guan, D. Tiwari, and P. Rech, "Quantum computing reliability: Problems, tools, and potential solutions", in *2023 53rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks - Supplemental Volume (DSN-S)*, 2023, pp. 2–3.

[4] D. Oliveira, E. Giusto, **B. Baheri**, Q. Guan, B. Montrucchio, and P. Rech, "A systematic methodology to compute the quantum vulnerability factors for quantum circuits", *IEEE Transactions on Dependable and Secure Computing*, pp. 1–15, 2023.

[5] **B. Baheri**, Q. Guan, V. Chaudhary, and A. Li, "Quantum noise in the flow of time: A temporal study of the noise in quantum computers", in *2022 IEEE 28th International Symposium on On-Line Testing and Robust System Design (IOLTS)*, 2022, pp. 1–5.

[6] **B. Baheri**, Q. Guan, S. Xu, and V. Chaudhary, "Sqcc: Smart quantum circuit cutting", in *2022 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, 2022, pp. 614–615.

[7] **B. Baheri**, J. Tronge, B. Fang, A. Li, V. Chaudhary, and Q. Guan, "Mars: Malleable actor-critic reinforcement learning scheduler", in *2022 IEEE International Performance, Computing, and Communications Conference (IPCCC)*, 2022, pp. 217–226.

[8] **B. Baheri**, Z. Xu, V. Chaudhary, Y. Mao, B. Fang, S. Xu, and Q. Guan, "Pinpointing the system reliability degradation in nisq machines", in *2022 IEEE International Conference on Quantum Computing and Engineering (QCE)*, 2022, pp. 646–652.

[9] D. Chen, **B. Baheri**, V. Chaudhary, Q. Guan, N. Xie, and S. Xu, *Approximate quantum circuit cutting*, 2022. arXiv: 2212.01270 [quant-ph].

[10] D. Chen, **B. Baheri**, V. Chaudhary, Q. Guan, N. Xie, and S. Xu, "Approximate quantum circuit reconstruction", in *2022 IEEE International Conference on Quantum Computing and Engineering (QCE)*, 2022, pp. 509–515.

[11] D. Oliveira, E. Giusto, E. Dri, N. Casciola, **B. Baheri**, Q. Guan, B. Montrucchio, and P. Rech, "Qufi: A quantum fault injector to measure the reliability of qubits and quantum circuits", in *2022 52nd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, 2022, pp. 137–149.

[12] S. A. Stein, **B. Baheri**, D. Chen, Y. Mao, Q. Guan, A. Li, S. Xu, and C. Ding, "Quclassi: A hybrid deep neural network architecture based on quantum state fidelity", in *Proceedings of Machine Learning and Systems*, D. Marculescu, Y. Chi, and C. Wu, Eds., vol. 4, 2022, pp. 251–264.

[13] **B. Baheri**, D. Chen, B. Fang, S. A. Stein, V. Chaudhary, Y. Mao, S. Xu, A. Li, and Q. Guan, "Tqea: Temporal quantum error analysis", in *2021 51st Annual IEEE/IFIP International Conference on Dependable Systems and Networks - Supplemental Volume (DSN-S)*, 2021, pp. 65–67.

[14] S. A. Stein, R. L'Abbate, W. Mu, Y. Liu, **B. Baheri**, Y. Mao, G. Qiang, A. Li, and B. Fang, "A hybrid system for learning classical data in quantum states", in *2021 IEEE International Performance, Computing, and Communications Conference (IPCCC)*, 2021, pp. 1–7.

[15] S. A. Stein, **B. Baheri**, D. Chen, Y. Mao, Q. Guan, A. Li, B. Fang, and S. Xu, "Qugan: A quantum state fidelity based generative adversarial network", in *2021 IEEE International Conference on Quantum Computing and Engineering (QCE)*, 2021, pp. 71–81.

[16] S. A. Stein, R. M. Tischio, **B. Baheri**, Y. Chen, Y. Mao, Q. Guan, A. Li, and B. Fang, *Genqu: A hybrid system for learning classical data in quantum states*, 2021.

[17] **B. Baheri** and Q. Guan, "Mars: Multi-scalable actor-critic reinforcement learning scheduler", *Kent State University ProQuest Dissertations Publishing*, 2020.

[18] D. Chen, Y. Xu, **B. Baheri**, C. Bi, Y. Mao, Q. Quan, and S. Xu, "Quantum-inspired classical algorithm for principal component regression", *arXiv preprint arXiv:2010.08626*, 2020.

[19] D. Chen, Y. Xu, **B. Baheri**, S. A. Stein, C. Bi, Y. Mao, Q. Quan, and S. Xu, "Quantum-inspired classical algorithm for slow feature analysis", *arXiv preprint arXiv:2012.00824*, 2020.

[20] **B. Baheri**, S. Anaya, P. Grubel, Q. Guan, and T. Randles, "Beecwl: A cwl compliant workflow management system", 2019.

Skills

- **CS Programming Languages:**
  - Qiskit, Python, C++, CUDA, Tesorflow, PyTorch, MPI
  - C, C++, R, Java, XML, C#, HTML and DHTML, JavaScript and JQuery, RDBMS, Perl, PHP, Glassfish, MySQL
- **CS Skills:**
  - Quantum Algorithm, Quantum Error Mitigation, Quantum Error Correction, Quantum Machine Learning, Quantum Cryptography, ML application, HPC Containers
  - Python, C++, CUDA, Tesorflow, PyTorch, ML application, MPI, HPC Containers, Linux, Windows
- **Other:**
  - **Design:** Web, Java Applet, Android
  - **Brief Understanding:** Photoshop, Illustrator, Indesign, Acrobat, MOS

Languages

- **English:** Full Professional
- **Persian:** Native